

(No Model.)

J. LEITER.
LARYNGOSCOPE.

No. 376,601.

Patented Jan. 17, 1888.

Fig. 3.

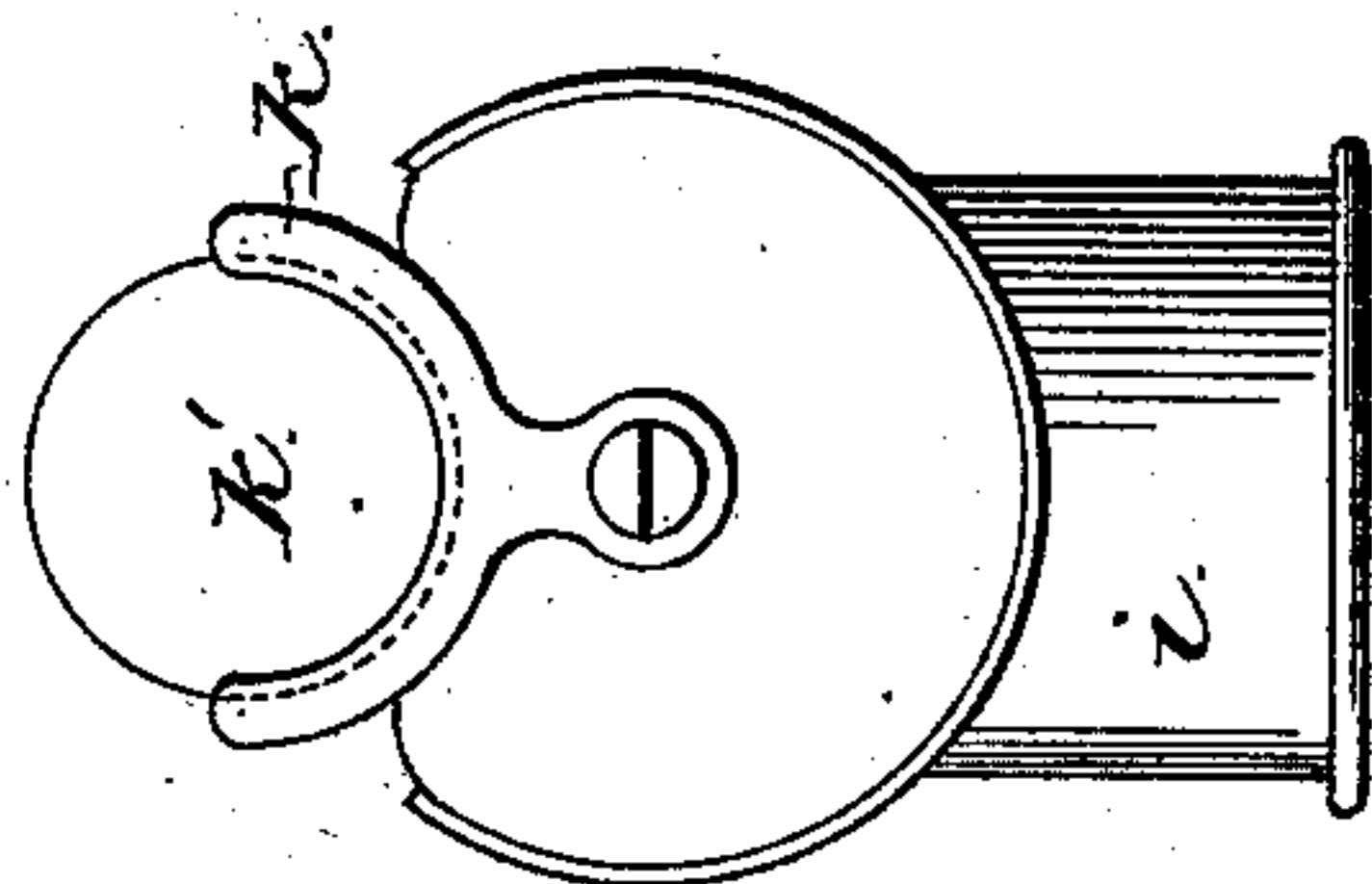


Fig. 2.

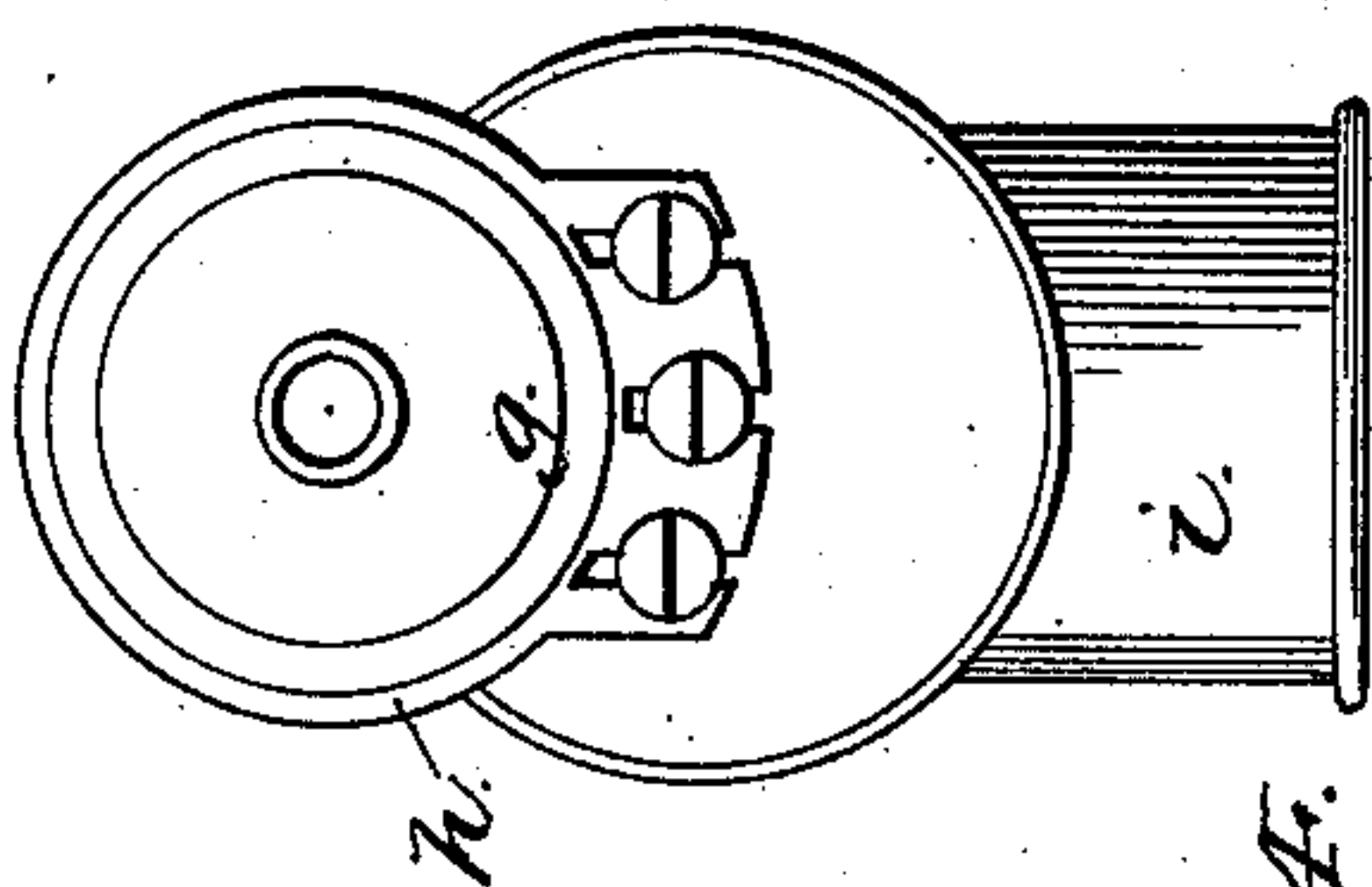


Fig. 4.

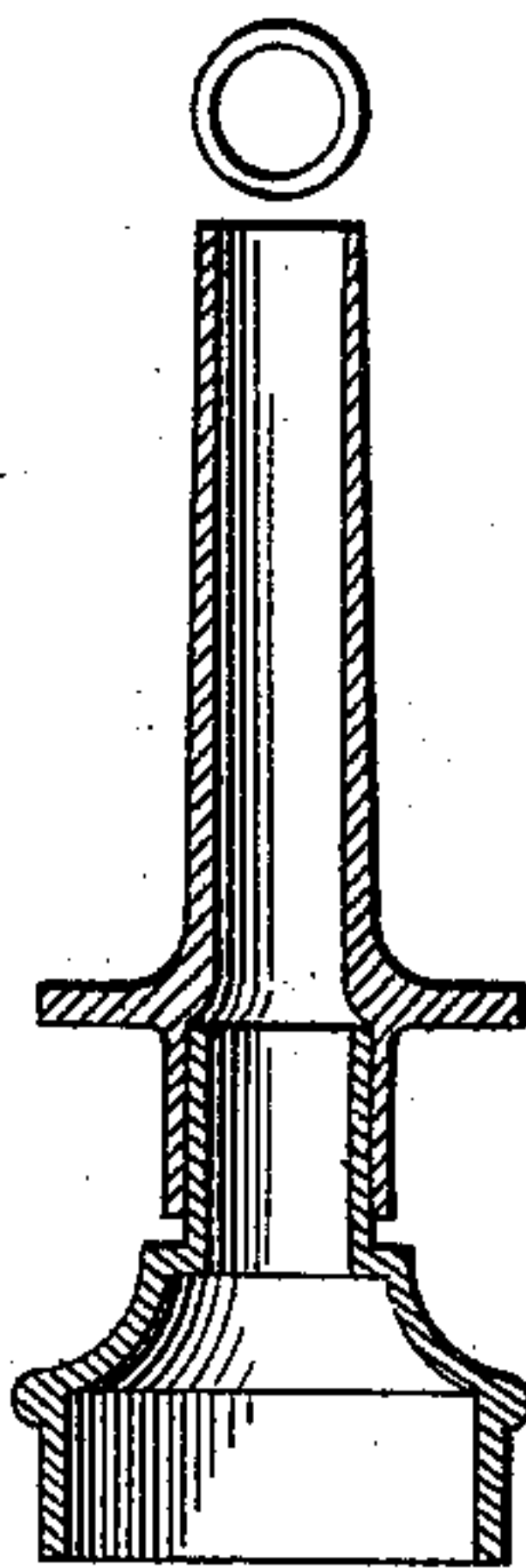


Fig. 6.

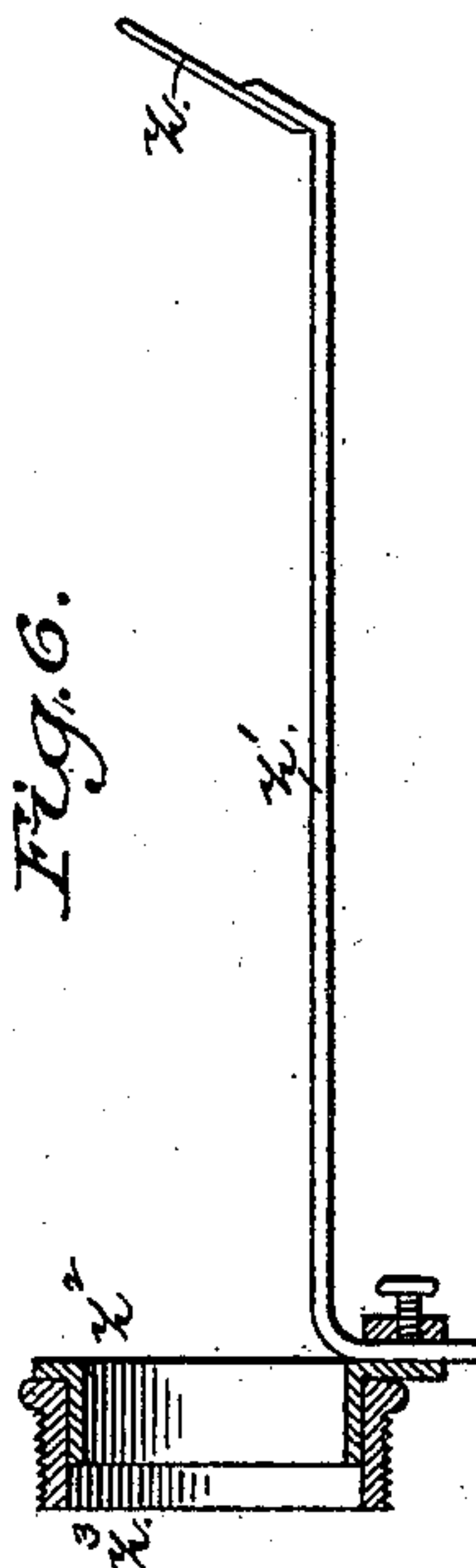


Fig. 1.

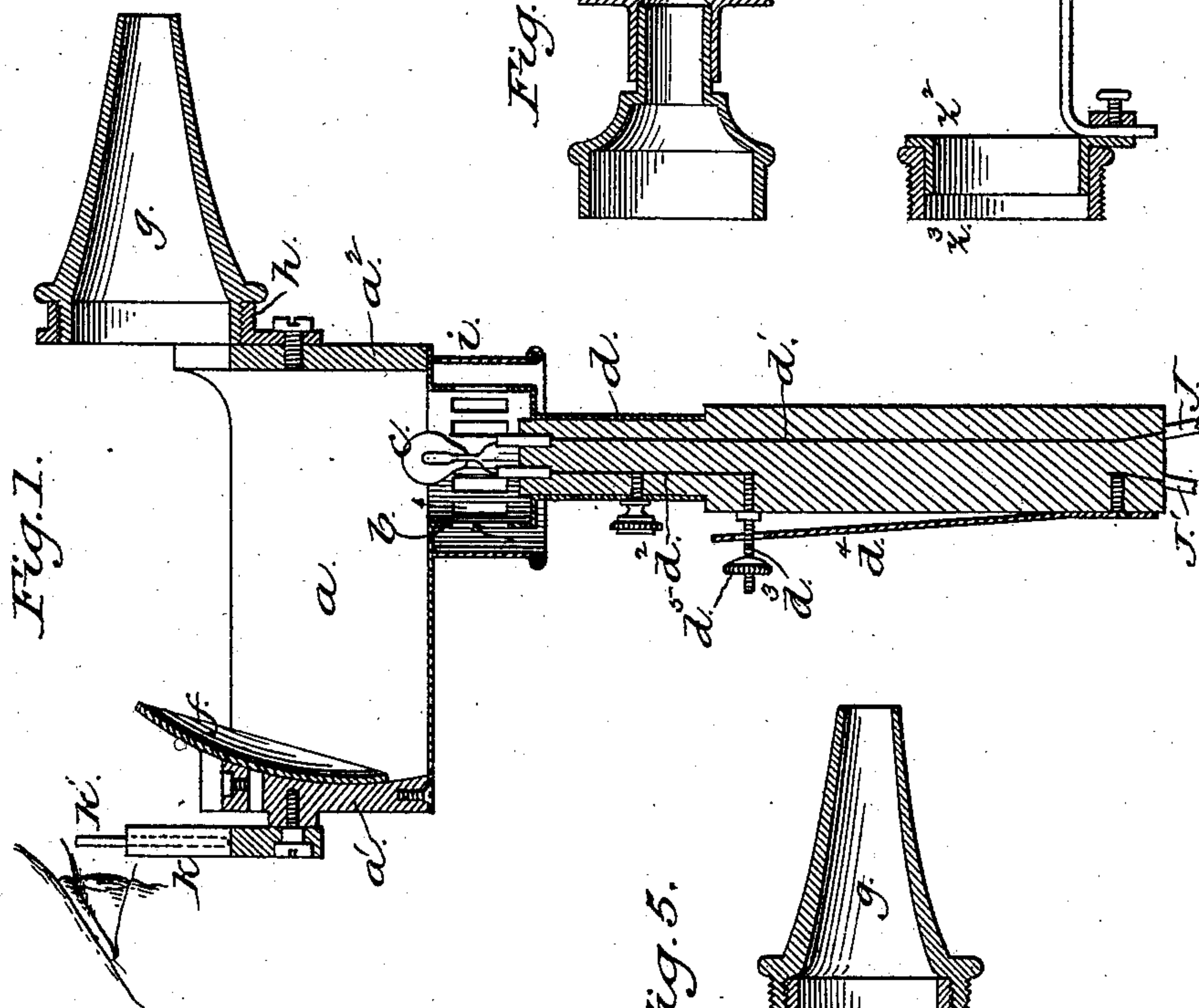
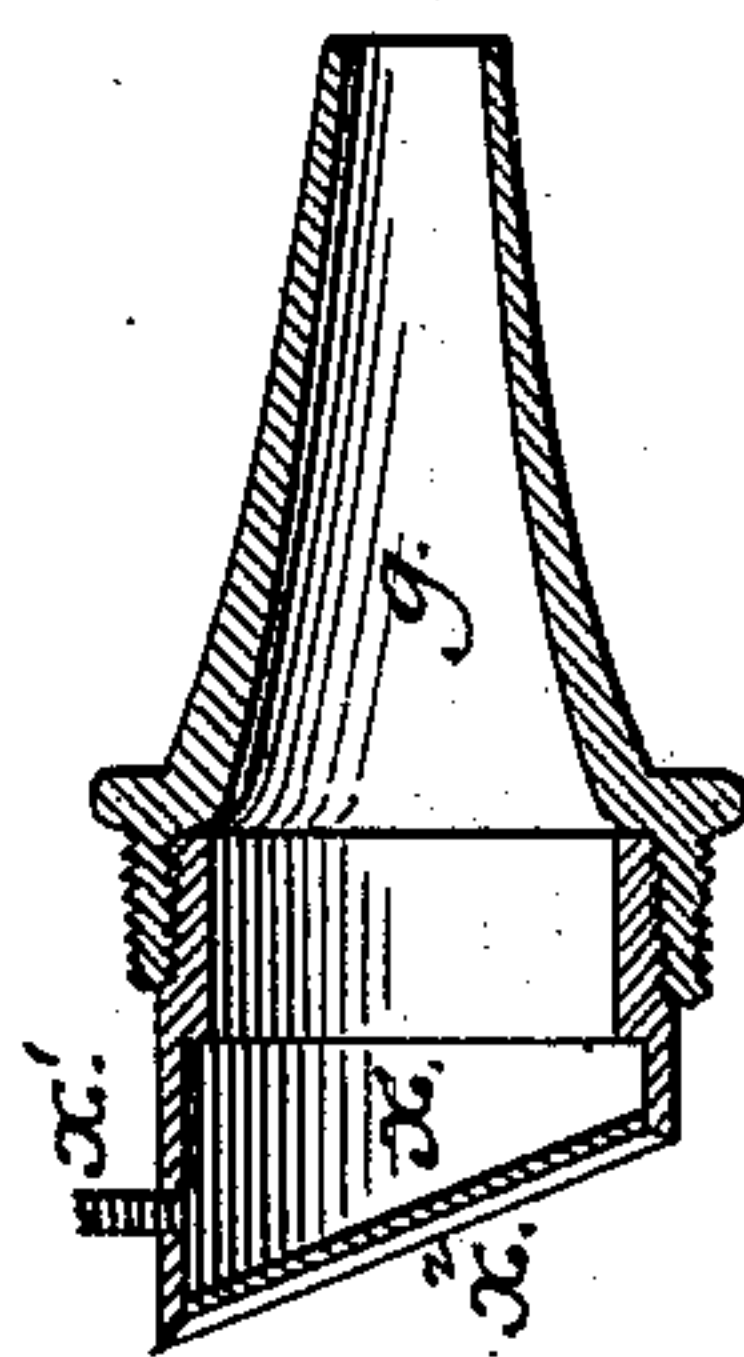


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEF LEITER, OF VIENNA, AUSTRIA-HUNGARY.

LARYNGOSCOPE.

SPECIFICATION forming part of Letters Patent No. 376,601, dated January 17, 1888.

Application filed May 14, 1887. Serial No. 238,260. (No model.) Patented in Austria-Hungary September 25, 1887, No. 11,020 and No. 40,070.

To all whom it may concern:

Be it known that I, JOSEF LEITER, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Province of Lower Austria, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Laryngoscopes, (for which I have obtained a patent in Austria-Hungary, dated September 25, 1887, and numbered—Vienna, 11,020, and Buda-Pesth, 40,070;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide a new and improved surgical instrument, specially adapted for illuminating and viewing interior parts of human and animal bodies.

The invention consists in the construction and arrangement of details and parts and combinations of the same, as hereinafter more fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of my improvement. Fig. 2 is a front end elevation of the same with the lower part removed. Fig. 3 is a rear end view of the same. Fig. 4 is a longitudinal section of an instrument used in connection with my improvement, and adapted for examining part of the urinary passage. Fig. 5 is a similar view of an instrument used in connection with my improvement, and adapted to produce and investigate the pneumatic motions of the diaphragm of the ear-drum; and Fig. 6 is a sectional elevation of an inclined mirror to be used in connection with my improvement, and adapted for examining throats, &c.

My improved instrument is provided with a cylindrical casing, *a*, which is open at the top, and carries near the front end the downwardly-extending perforated tube *b*, in which is held the incandescent electric lamp *c*, supported on the upper end of the handle *d*, secured in the bottom of the tube *b* and extending downward. The handle *d* closes the lower end of the tube *b*, and also serves to support and manipulate the entire instrument.

On the rear wall, *a'*, of the casing *a* is held and placed in an angular position the reflector *f*, standing with its optical axis between the lamp *c* and the ring *h*, held vertically adjustable on the front wall, *a''*, of the casing *a*, and serving to support the various instruments used in connection with my improvement, and adapted for the different cavities of human or animal bodies. The reflector *f* is curved sufficiently, so that its focal distance is equal to the distance between the lamp *c* and the center of the reflector, whereby a number of parallel rays of light pass into the conical instrument *g*, supported by the ring *h*, so that the walls of the cavities in which the instrument *g* is passed are strongly illuminated. The instrument *g* (shown in Fig. 1) is specially adapted for examining the ears.

On the outside of the rear wall, *a'*, and in the center of the same is pivoted the keeper *k*, which is semicircular in its upper grooved part, and adapted to receive a lens, *k'*, the center of which is in line with the axis of the ring *h* and the instrument supported by the ring. As the lens *k'* is removable, the operator is enabled to select a lens suiting his eyesight.

The perforated tube *b* is surrounded by a concentric shell, *i*, which is open at its lower end and permits a free draft of air to pass to the lamp *c*, so as to cool the same, and at the same time the shell *i* prevents rays of light from passing from the outside through the perforations into the tube *b*.

On the handle *d* are held the metallic conducting-plates *d'* and *d''*, which connect at their upper ends with the lamp *c* in the usual manner. The lower outer end of the plate *d'* is connected with the one conducting-wire *J*; but the other plate, *d''*, is connected at its end with the bolt *d'''*, which passes on its outer end freely through an aperture in the conducting-plate *d'*, connected with the other conducting-wire, *J'*. On the threaded end of the bolt *d'''* screws the nut *d''''*, which when screwed against the plate *d''* establishes an electric connection between the plates *d''* and *d'*, thus completing the circuit. The latter is broken and the light in the lamp *c* extinguished by disconnecting the nut *d''''* from the plate *d''*.

The ring *h* is held vertically adjustable, so as to enable the operator to get the full benefit

of the reflected light of the lamp *c*. The operator can swing the keeper *k* to one side or downward, so as to be enabled to introduce another instrument into the conical instrument *g* for cleaning, cutting, &c., affected parts which have been previously examined.

The instruments, as above described, and shown in Figs. 4, 5, and 6, are adapted to be screwed in the ring *h*, and are then applied in connection with my improvement. The instrument shown in Fig. 4 is specially adapted for examining part of the urinary passages of the human body. The instrument shown in Fig. 5 is for the purpose of producing and investigating the pneumatic motions of the diaphragm of the ear-drum; and it consists of the conical instrument *g*, on the rear end of which is screwed a pipe, *x*, provided at its end with the pane of glass *x*², held in an inclined position to the axis of the funnel *g*, so as to prevent a reflection of the reflected rays of light from the lamp *c* to the eye of the operator. On the tube *x* is also secured a pipe, *x'*, on which is fastened one end of a flexible tube for blowing air into or exhausting the air from the ear.

The instrument shown in Fig. 6 is adapted for examining the throat; and it consists of the mirror *z*, held in an inclined position at the end of the rod *z'*, secured to the ring *z*², mounted to turn in the ring *z*³, adapted to be fastened to the ring *h*.

When the ring *z*² is turned in its bearing, the mirror *z* is also turned, whereby the entire interior wall of the throat into which the instrument is inserted is reflected by the mirror to the eye of the operator on the lens *k*.

The main instrument can also be used as a hand-lamp when the instrument secured to the ring *h* is removed.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a surgical instrument, the combination, with a cylindrical casing open at the top, of an electric lamp held on the inside of the said casing, and a concave reflector for throwing the rays of light from the electric lamp into the cavity to be examined and in line with the eye of the operator, substantially as shown and described.

2. In a surgical instrument, the combination, with a cylindrical casing open at the top, of an electric lamp held inside of the said casing, a reflector held on the inside of the casing, and a ring held on the casing and adapted to receive instruments passed into cavities of the human body, the said reflector being so arranged as to throw the rays of light from the lamp into the said ring, substantially as shown and described.

3. In a surgical instrument, the combination, with a cylindrical casing closed at the ends and open at the top, of an electric lamp held in the inside of the said casing, a reflector held on the inside of one end of the casing, a vertically-adjustable ring held on the other end of the casing and into which are thrown the rays from the reflector, and a movable lens-holder held on the rear of the reflector and in line with the said ring, substantially as shown and described.

4. In a surgical instrument, the combination, with a cylindrical casing, of a perforated tube projecting downward from the said casing, a shell surrounding the said perforated tube, and an electric lamp held on the inside of the said perforated tube, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEF LEITER.

Witnesses:

EDMUND JUSSEN,
OTTO SCHIFFEN.